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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/434,024	11/04/1999	KATSUTOMO TERASHIMA	VX992028	3387

7590 12/30/2004

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EXAMINER	
JACKSON, CORNELIUS H	
ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/434,024	TERASHIMA ET AL.	
	Examiner	Art Unit	
	Cornelius H. Jackson	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *40-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *40-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In view of the Appeal Brief filed on 12 October 2004, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

Claim Objections

2. Claims 49 and 50 are objected to because of the following informalities: The preambles of both claims refer back to the independent claim in which it depends on as an "output control method" instead of a device. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 40-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara et al. (6130904) in view of Hofmann et al. (6014398). Regarding claim 40, Ishihara et al. disclose an excimer laser **Figs. 16 and 29** comprising a chamber device

1/47, a gas mixture sealed in the chamber device **1/47**, the gas mixture being composed of a rare gas selected from the group consisting of Kr and Ar, a buffer gas of Ne, and a halogen gas (F); gas supply means **2, 3/41, 42, 43** for supplying the *mixture gas* to the chamber device **1/47** and means for carrying out pulse oscillation, **8, 9/57, 58** in the chamber device **1/47** by discharges across discharge electrodes to excite the gas mixture to oscillate a pulsed laser **see col. 8, lines 18-35**. Ishihara et al. fail to teach wherein a predetermined amount of Xe gas having a concentration of approximately 10 ppm is supplied from xenon gas supply means to the gas mixture in the chamber device, whereby the chamber device operates to maximize an output energy of the laser and minimize a dispersion of the output energy. Hofmann et al. teach wherein a predetermined amount of Xe gas having a concentration of approximately 10 ppm is supplied from xenon gas supply means to the gas mixture in the chamber device, **see col. 7, line 5-col. 10, line 30**, whereby the chamber device **10** operates to maximize an output energy of the laser and minimize a dispersion of the output energy, these output characteristic are exhibited by the reduction in burst phenomena/transients, **see col. 7, lines 29-35**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teachings of Hofmann et al. to the gas laser of Ishihara et al. to provide a very narrow band pulse excimer laser capable of producing pulses at a range of about 500-2000Hz with enhanced energy dose control and reproducibility.

Regarding claims 41, Ishihara et al. disclose an excimer laser **Figs. 16 and 29** comprising a chamber device **1/47**, a gas mixture sealed in the chamber device **1/47**,

the gas mixture being composed of a rare gas selected from the group consisting of Kr and Ar, a buffer gas of Ne, and a halogen gas (F); gas supply means **2, 3/41, 42, 43** for supplying the *mixture gas* to the chamber device **1/47** and means for carrying out pulse oscillation, **8, 9/57, 58** in the chamber device **1/47** by discharges across discharge electrodes to excite the gas mixture to oscillate a pulsed laser **see col. 8, lines 18-35** wherein an amount of xenon gas is supplied from the gas supply means and previously mixed in the gas mixture and sealed into the gas supply means, **see col. 17, lines 43-50**. Ishihara et al. fail to teach wherein a predetermined amount of Xe gas having a concentration of approximately 10 ppm is supplied from xenon gas supply means to the gas mixture in the chamber device, whereby the chamber device operates to maximize an output energy of the laser and minimize a dispersion of the output energy. Hofmann et al. teach wherein a predetermined amount of Xe gas having a concentration of approximately 10 ppm is supplied from xenon gas supply means to the gas mixture in the chamber device, **see col. 7, line 5-col. 10, line 30**, whereby the chamber device **10** operates to maximize an output energy of the laser and minimize a dispersion of the output energy, these output characteristic are exhibited by the reduction in burst phenomena/transients, **see col. 7, lines 29-35**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teachings of Hofmann et al. to the gas laser of Ishihara et al. to provide a very narrow band pulse excimer laser capable of producing pulses at a range of about 500-2000Hz with enhanced energy dose control and reproducibility.

Regarding claim 42, Ishihara et al. teach an excimer laser **Figs. 16 and 29** control method comprising a step of sealing a gas mixture in the chamber device **1/47**, the gas mixture being composed of a rare gas selected from the group consisting of Kr and Ar, a buffer gas of Ne, and a halogen gas (F) by supplying the *mixture gas* from gas supply means **2, 3/41, 42, 43**; a step of carrying out pulse oscillation, **8, 9/57, 58** in the chamber device **1/47** by discharges across discharge electrodes to excite the gas mixture to oscillate a pulsed laser **see col. 8, lines 18-35**. Ishihara et al. fail to teach a xenon gas supply step of supplying a predetermined amount of Xe gas into the chamber device in which the gas mixture is sealed so that the gas mixture sealed in the chamber device has a xenon concentration of approximately 10 ppm, so that the xenon contained within the gas mixture maximizes an output energy of the laser and minimizes a dispersion of the output energy. Hofmann et al. teach a xenon gas supply step of supplying a predetermined amount of Xe gas into the chamber device in which the gas mixture is sealed so that the gas mixture sealed in the chamber device has a xenon concentration of approximately 10 ppm, **see col. 7, line 5-col. 10, line 30**, so that the xenon contained within the gas mixture maximizes an output energy of the laser and minimizes a dispersion of the output energy, these output characteristic are exhibited by the reduction in burst phenomena/transients, **see col. 7, lines 29-35**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teachings of Hofmann et al. to the gas laser of Ishihara et al. to provide a very narrow band pulse excimer laser capable of producing pulses at a range of about 500-2000Hz with enhanced energy dose control and reproducibility.

Regarding claim 43, Ishihara et al. teach a step of sealing the xenon gas to be supplied to the chamber to xenon gas supply means, **see col. 17, lines 43-50,** a concentration sensing step of detecting the concentration of a gas to be added to the gas mixture in the chamber device, (it would have been obvious to one of ordinary skill in the art at the time the invention was made to control the concentration of additive gas being added within the gas mixture/chamber device to obtain a desire efficiency from the laser system), therefore during the xenon gas supplying steep, a supply amount of the xenon gas sealed in the xenon gas supply means and supplied to the chamber is controlled.

Regarding claim 44, Ishihara et al. teach an excimer laser **Figs. 16 and 29** control method comprising a step of preparing a gas mixture composed of a rare gas selected from the group consisting of Kr and Ar, a buffer gas of Ne, and a halogen gas (F); a xenon gas mixing step of supplying a predetermined amount of xenon gas into the gas mixture and mixing the predetermined amount of xenon gas with the gas mixture **see col. 17, lines 43-50**, a step of supplying the gas mixture to the chamber device, a sealing step of sealing the gas mixture in the chamber device; and an oscillation step of carrying out pulse oscillation, **8, 9/57, 58** in the chamber device **1/47** by discharges across discharge electrodes to excite the gas mixture to oscillate a pulsed laser **see col. 8, lines 18-35**. Ishihara et al. fail to teach a xenon gas supply step of supplying a predetermined amount of Xe gas has a xenon concentration of approximately 10 ppm, so that the xenon contained within the gas mixture maximizes an output energy of the laser and minimizes a dispersion of the output energy. Hofmann et al. teach a xenon

gas supply step of supplying a predetermined amount of Xe gas into the chamber device in which the gas mixture is sealed so that the gas mixture sealed in the chamber device has a xenon concentration of approximately 10 ppm, **see col. 7, line 5-col. 10, line 30**, so that the xenon contained within the gas mixture maximizes an output energy of the laser and minimizes a dispersion of the output energy, these output characteristic are exhibited by the reduction in burst phenomena/transients, **see col. 7, lines 29-35**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teachings of Hofmann et al. to the gas laser of Ishihara et al. to provide a very narrow band pulse excimer laser capable of producing pulses at a range of about 500-2000Hz with enhanced energy dose control and reproducibility.

Regarding claims 49-52, Hofmann et al. disclose all the stated limitations, **see col. 9, lines 50-55**.

Regarding claims 45-48, Hofmann et al., as applied to claims 40-44 and 49-52 above, teach all the stated limitations except for an xenon sensor means for detecting an amount of xenon within the chamber device and a controller for controlling the amount of xenon supplied to the chamber. Ishihara et al. teach a sensor means **12 and/or 13** for detecting an amount within the chamber device and a controller **10** for controlling the amount of xenon supplied to the chamber. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the sensor means and the controller as taught in Ishihara et al. in the gas system of Hofmann et al. such that the amount of Xe fed into laser chamber is a prescribed amount, **see col. 8, lines 36-58**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cornelius H. Jackson whose telephone number is (571)272-1942. The examiner can normally be reached on 8:00 - 5:00, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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